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COOPERATIVE RURAL HEALTH WORK OF THE PUBLIC HEALTH SERVICE IN THE FISCAL YEAR 1920.

By L. L. LUMSDEN, Surgeon, United States Public Health Service.

The amounts appropriated for the special studies of and demonstration work in rural sanitation by the United States Public Health Service in the last several fiscal years have been as follows:

Fiscal year.	Amount.
1917.....	\$25, 000
1918.....	150, 000
1919.....	150, 000
1920.....	50, 000

In the calendar years 1914, 1915, and 1916, sanitary surveys of typical rural counties in different sections of the country were conducted by the United States Public Health Service, in cooperation with State and local authorities. The Government expenses for these surveys were met mainly with funds allotted from appropriations to the Public Health Service for "Field Investigations." Eighteen counties in 16 States—northern, eastern, southern, and western—were surveyed. The findings and the results from these surveys are presented in Public Health Bulletin No. 94. Among the results were the determination of improved methods for the correction of insanitary conditions and the formulation of standard procedure in health work for rural communities. Among the conclusions were (1) that at less than 2 per cent of the rural homes in the United States are the most essential principles of sanitation consistently in practice; (2) that for less than 3 per cent of our rural population is local health service approaching adequacy provided; (3) that sustained, efficient, whole-time local health service is essential to the establishment and maintenance of reasonably good sanitary conditions in our rural districts; and (4) that duly efficient personnel for rural health work generally can not be expected without active participation in the work by central agencies, such as official State and National health agencies, to prevent adverse influence of local politics.

Since 1916 the rural sanitation funds of the Public Health Service have been used almost entirely for cooperative demonstration work. In the active period of the war, this work was conducted mainly in areas immediately around military camps and critically important war industries. The work in these areas served to protect the military forces and the civilian population and also to accomplish demonstrations in high-grade rural sanitation, the latter being the primary purpose for which the appropriations were granted.

Compilation of data, by counties, on cooperative demonstration work in rural sanitation in the fiscal year 1920.

Work started (1919).	Charleston, S. C.	Cherokee, Kans.	Cumber- land, N. C.	Edgecombe, N. C.	Glynn, Ga.	Greene, Mo.	Hamilton, Tenn.	Harrison, Miss.	Jasper, Mo.	Lauderdale, Ala.	Madison, Ala.
	July 1.	July 1.	Aug. 1.	July 1.	July 1.	Jan. 1.	Jan. 1.	July 1.	July 1.	Aug. 1.	July 1.
Expenditures:											
(a) Rural sanitation fund (P. H. S.)	\$4,263.37	\$556.91	\$1,530.43	\$1,592.50	\$2,105.99	\$250.44	\$1,108.33	\$1,200.00	\$2,074.54	\$275.00	\$3,338.10
(b) State	1,125.00	1,319.85	1,456.25	1,500.00	1,500.00	1,192.43	2,826.20	2,089.70	2,900.00	2,900.00	5,668.03
(c) County	12,165.66	5,011.15	5,912.50	5,000.00	13,160.38	4,192.43	2,826.20	5,210.00	4,573.00	5,268.24	2,587.23
(d) Other agencies	2,969.96	1,832.05	820.00	.....	3,260.00	4,442.01	.....	.....	.....	.....	.....
Total	9,553.99	9,009.96	10,019.21	6,092.50	18,526.37	8,884.88	3,934.53	6,410.00	8,737.24	8,441.24	11,593.33
Number of lectures	42	35	43	33	55	212	.....	83	113	54	7
Attendance at lectures	3,000	4,700	6,605	1,433	3,819	8,292	.....	10,283	6,363	2,257	1,333
Pieces of literature distributed	2,500	19,118	7,395	3,185	2,907	11,966	.....	2,207	16,322	4,871	2,561
Sanitary inspections:											
(1) Private homes	200	1,649	2,651	912	30,174	20	4,475	9,925	3,778	6,658	17,313
(2) Schools	31	220	66	.....	48	58	50	41	129	101	46
(3) Churches	2	2	16	.....	8	.....	16	16	8	.....	.....
(4) Stores, markets, etc.	50	535	1,576	.....	5,938	43	130	2,477	108	2,723	145
Total	283	2,406	4,308	912	36,168	121	4,671	12,459	4,023	9,542	17,504
Special inspections:											
Food product places	102	481	1,638	180	2,454	11	75	58	460	1,092	474
Physical examination of school children:											
(1) Number examined	327	2,040	4,629	1,237	1,501	6,393	.....	1,003	3,723	6,477	3,756
(2) Number found defective	213	1,873	535	469	1,907	5,398	.....	755	2,915	3,249	1,420
Public health nursing:											
(1) Number of visits to cases of com- municable diseases	21	1,391	10,952	489	594	111	.....	77	1,991	452	72
(2) Number of talks given groups of persons	475	41	46	263	61	10	.....	6	237	.....	.....
(3) Number of visits to give prenatal care	.....	45	140	52	18	19	.....	4	154	47	2
(4) Number of visits to explain and demonstrate infant hygiene	291	267	267	126	17	441	24	.....	1,483	165	356
Laboratory examinations:											
Positive	17	35	297	17	113	.....	.....	231	2	552	582
Negative	82	.....	306	59	628	.....	1	435	1	864	1,067

Compilation of data, by counties, on cooperative demonstration work in rural sanitation in the fiscal year 1920—Continued.

Work started (1919).	Mason, Ky.	Muscookee, Ga.	Ottawa, Okla.	Talladega, Ala.	Walker, Ala.	Walker, Ga.	Arlington, Va.	Wake and Durham, N. C.	11 Virginia counties ^s	Total.
	July 1.	Aug. 1.	July 1.	July 1.	July 1.	Nov. 1.	Aug. 1.	July 1.	July 1.	
Expenditures:										
(a) Rural sanitation funds (P. H. S.).....	\$2,151.67	\$275.00	\$3,612.76	\$1,999.15	\$1,696.87	\$800.00	\$275.00	\$2,021.26	\$13,663.37	\$45,390.72
(b) State.....	5,587.11			312.50			2,000.00		18,253.85	30,554.56
(c) County.....		18,217.83	3,938.91	6,351.41	4,100.00	1,901.80	3,050.00	44,038.00	10,815.35	144,539.32
(d) Other agencies.....	375.00	18,217.83	2,486.44	2,551.71	1,400.00		3,200.00		54,011.47	54,011.47
Total.....	8,113.78	36,710.66	10,038.11	11,214.77	7,196.87	2,701.80	8,525.00	46,039.26	42,732.57	274,466.07
Number of lectures.....	78	10	33	20	49	61	64		191	1,183
Attendance at lectures.....	5,102	357	(7)	1,537	2,245	3,802	4,480		18,000	83,668
Pieces of literature distributed.....	1,645	11,285	3,322	6,161	3,565	3,911	2,224			105,345
Sanitary inspections:										
(1) Private homes.....	1,103	47,010	2,645	571	1,282	3,284	3,472		12,373	150,095
(2) Schools.....	126	31	25	32	54	54	321		1,492	1,492
(3) Churches.....		17	2	21	4		10		105	105
(4) Stores, markets, etc.....	16	2,369	371	72	150	83	50			16,876
Total.....	1,245	50,010	3,043	696	1,530	3,421	3,853		12,373	168,568
Special inspections:										
Food product places.....	8	234	35	221	78	46	18			7,665
Physical examination of school children:										
(1) Number examined.....	2,408	1,376	1,593	1,964	3,559	770	2,063		45,019	45,019
(2) Number found defective.....	1,939	1,069	738	1,094	2,675	562	1,750		27,631	27,631
Public health nursing:										
(1) Number of visits to cases of communicable diseases.....	223	236	733	705	772		113			18,872
(2) Number of talks given groups of persons.....	90	17	80	74	121		941			2,462
(3) Number of visits to give first aid.....	18	73	47	8	43					2,670
(4) Number of visits to explain and demonstrate infant hygiene.....	87	1,964	125	38	44					5,428
Laboratory examinations:										
Positive.....	170	585		438	124	4	70			3,372
Negative.....	211	1,223		1,340	251	5	305			7,438

With the termination of the active period of the war an enlargement of the program of cooperative rural health work, as an activity of the Federal health agency to stimulate nation-wide work to make up the losses in vital capital caused by and coincident with the war, appeared, in view of the demonstrated effectiveness of the plan proposed, to be definitely and clearly advisable. The estimate of appropriation approved by the Bureau of the Public Health Service and the Treasury Department and submitted to Congress for special studies of and demonstration work in rural sanitation in the fiscal year 1920 was \$500,000. Congress granted only \$50,000.

WORK IN THE FISCAL YEAR 1920.

On account of the reduction in the appropriation, the work in a considerable number of areas in which it was yielding excellent results had to be discontinued. Numerous requests from communities, counties, and States in different parts of the country for cooperation from the Public Health Service in the demonstration of methods of rural health work had to be declined. The amount to be appropriated by Congress for this work could not be anticipated, and the \$50,000 was not made available until about the middle of July, 1919. Thus the fiscal year had begun before contracts for the work during the fiscal year ended June 30, 1920, could be made. Notwithstanding such handicap, satisfactory odds from State and local sources for the financial support of the cooperative projects were obtained.

On July 1, 1919, about \$9,000 unexpended under previous contracts remained available. This amount and the \$50,000 appropriated made \$59,000 available for the cooperative rural health work of the Public Health Service in the fiscal year 1920. Of this sum, \$45,360.72 has been expended under allotments for cooperative projects in counties, and about \$13,000 has been expended for administration and supervision of the concrete activities and for general studies of the problem of rural sanitation.

During the fiscal year ended June 30, 1920, cooperative projects were carried out in 31 counties in 11 States. To meet the expenses of this cooperative work, a total of \$175,093.88 was furnished and expended from community, county, and State governmental sources, and \$54,001.47 from civic sources, such as local health associations, Red Cross chapters, and the International Health Board. Thus, this investment of Federal funds has been met with odds of about five to one, which indicates unmistakably that such investment of Federal funds stimulates to a significant degree State, county, and municipal governments to invest in the business of rural health promotion.

The scope and the results of the work and the funds expended from the different sources are presented in the accompanying tabular statement.

Plan of Work.

In every instance the cooperation of the Public Health Service is extended only in response to formal requests from the proper governmental authorities of the county and from the State health department. A preliminary survey of the situation is made by a representative of the State health department or a representative of the Public Health Service or both. From the data obtained in the preliminary survey the general plan of work to be carried out and the amount of funds necessary to secure the definite results desired are agreed to by the several agencies which are to cooperate in the project.

The working force in the average demonstration county consists of a whole-time county health officer, a whole-time sanitary inspector, and a whole-time health nurse. The health officer and the other members of the working force are appointed by the proper county authorities, but they must be acceptable to all of the cooperating agencies. The only ground upon which the interests of all the cooperating agencies can meet is that of fitness of the personnel to render efficient services. The county health officer is given a status of field agent in the Public Health Service and also, as a rule, a status of deputy State health officer. Thus his position is an example of common-sense coordination of the administrative features of the activities of the properly constituted local, State, and National governmental health agencies.

The different branches of health work indicated in the county are taken up in what appears to be the logical and most advantageous sequence. Every salient branch of health work—including safeguarding of water and food supplies, sanitary excreta disposal, fly control, antimalarial measures, infant hygiene, school inspection, antituberculosis and antivenereal disease measures, industrial hygiene, etc.—is carried out in the demonstration units. Thus, the work is comprehensive, and it can be adjusted for advantageous cooperation from the various and sundry governmental and extra-governmental health agencies which have been created for one reason or another.

The plans of the work carried out in Wake and Durham Counties, N. C., and in the group of 11 counties in Virginia, differed somewhat from those of the work carried out in the other counties presented in the tabular statement, in that the activities were concentrated especially upon measures for furnishing clean water supplies and sanitary disposal of human excreta.

Demonstration in Wake and Durham Counties, N. C.

The demonstration work in rural sanitation in Wake and Durham Counties, begun in the fiscal year ended June 30, 1919, with an allotment of \$10,000 from the rural sanitation fund of the Public Health

Service and a special appropriation of \$5,000 made by each of the two counties, was continued in the fiscal year ended June 30, 1920, from July 1, 1919, to November 1, 1919. The funds available for the special project in the fiscal year ended June 30, 1920, were \$2,144.41 from the Public Health Service and about \$5,000 from the counties, together with about \$45,000 of county funds appropriated for general health activities.

Large returns were obtained on the investment for the cooperative rural sanitation work in these two counties. The advancement of sanitary improvements was remarkably rapid and extensive. In a large proportion of the closely built-up areas public water supplies of good quality were installed to take the place of polluted private supplies and sewerage systems were installed, with the abolishment of hundreds of insanitary privies. In the strictly rural areas over 2,000 privies of sanitary type were installed either to replace privies of grossly insanitary type or to provide sanitary conveniences at homes where no privies previously had existed. Milk and other food supplies were safeguarded by the installation of pasteurizing plants and by general sanitary measures. Over \$400,000 was expended by local property owners for sanitary improvements, including (1) \$104,000 for water supplies; (2) \$213,700 for installation or extension of sewerage systems; (3) \$41,990 for installation of sanitary privies; (4) \$1,100 for installation of septic tanks; (5) \$28,000 for pasteurizers and other improved equipment at dairies; (6) \$5,406 for screening, washing machines, and other improved equipment at eating establishments, and (7) \$14,400 for ditching and oiling to prevent breeding of potentially malaria-carrying mosquitoes.

As a result of the sanitary improvements there was a wholesome reduction in the local prevalence of many of the communicable diseases. In Durham County 214 cases of and 31 deaths from typhoid fever were reported in the calendar year 1918, as against only 70 cases with 5 deaths in the period January 1 to October 1, 1919.

In the fiscal year ended June 30, 1920, Wake County established a county health department with whole-time personnel, appropriating for its support \$21,500, and Durham County increased its annual appropriation for its whole-time health department from \$12,538 to \$22,538.

Cooperative Demonstration Work in 11 Virginia Counties.

Besides the cooperation in Arlington County, indicated in the tabular statement on pages 2332-33, a special plan of cooperative demonstration work in rural sanitation was carried out in the following 11 counties in Virginia: Alleghany, Bath, Chesterfield, Greenville, Henry, Lunenburg, Mecklenburg, Orange, Rockbridge, Roanoke, and Warren. This plan was formulated with a view to accomplishing

on the most economical basis possible the most important results of sanitation in counties unable or (at the beginning) unwilling to expend much for health service.

In January, 1919, the State Board of Health of Virginia formally requested the Public Health Service to allot \$15,000 from its rural sanitation fund to meet a sum of at least equal amount to be allotted from the State board of health appropriations, so as to provide a combined fund of at least \$30,000 for the project. The preliminary work was begun in February, 1919, when Passed Asst. Surg. W. F. Draper was detailed to Virginia to cooperate with the State board of health and the State council of national defense to assist in inaugurating and supervising the activities in different parts of the State. The first few months were spent in negotiating with the authorities and interested citizens of various counties and in conducting a series of public meetings in different parts of the State to explain the purpose and the importance of increased health work in Virginia. Little of the detailed work in the counties was performed before July 1, 1919. It was expected that the authorities of counties generally would be reluctant to appropriate county money to enter into the cooperative health project; but soon after the negotiations were begun it was discovered with surprise and, because of the popular interest indicated, with gratification that every county to which the proposition had been presented was offering to participate, and the requests from counties for the cooperation soon exceeded the limits of the combined fund from State and National Government sources.

Each of the 11 counties furnished \$1,000 to support the cooperative work. The county fund was met with \$500 from the State board of health and \$500 from the Public Health Service, making a budget of \$2,000 for the conduct of the work in each county for one year. With this budget a man trained in the fundamental principles of health work was engaged as sanitary demonstrator at a salary of \$100 a month and automobile transportation was provided. The branches of work concentrated upon were those which appeared to promise the most in health protection from the amount of work and money to be expended. They included especially sanitary disposal of human excreta, protection of drinking-water supplies against dangerous contamination, and, to a less extent, control of mosquito breeding.

The duties of the sanitary demonstrator were as follows:

1. To make sanitary surveys of incorporated towns and villages in the county and recommend the adoption and enforcement of such sanitary ordinances as might be needed, to arouse popular interest to support the sanitary work, and to give all possible assistance to town councils and to individual citizens in carrying out the detailed measures for sanitary improvements.

2. To inaugurate measures to provide sanitary toilets and a safe water supply at every school in the county, to assist in securing funds for same, and to supervise the construction work to see that it was carried to a successful conclusion.

3. To do all possible by educational measures, persuasion, and technical assistance to secure as far as possible at individual homes throughout the county the installation and proper maintenance and use of sanitary toilets and safe water supplies.

4. To create popular interest and sentiment for public health work so that the citizens would be definitely concerned to have a duly comprehensive and adequate county health service, or at least continue on the same scale the following year.

An officer of the Public Health Service, with especial training in rural health work, was assigned to supervise the cooperative work in each group of four counties. The duties of the supervising officer were to plan and direct the work of the county sanitary demonstrators, help them in their problems, appear before town councils, county authorities, and public meetings in matters relating to the work and, through his knowledge and experience, stimulate popular cooperation for the success of the demonstration.

The results of the work are very encouraging. In each of the counties in which the work has been conducted for as long as 10 months, a large number of the homes (ranging from 300 to 2,500) have made radical sanitary improvements. In the average county the prevalence of filth-borne infections has been markedly reduced. As an indication that the results have been convincing is the fact that all of these counties, with one exception, have agreed to increase their appropriations from county sources for county health work in the coming year from 50 to 500 per cent. Furthermore, a number of counties within the general vicinity of the demonstration counties are now inaugurating, entirely or largely at county expense, more or less adequate county health services.

That this cooperative demonstration work in rural sanitation has stimulated State-wide public interest for public health organization and development in the rural districts of Virginia is indicated by the increasing appropriations from year to year shown in the following table:

Appropriations for rural sanitation.

Year.	State.	Counties.	Total.
1915.....	\$7,200	\$7,200	\$14,400
1917.....	7,200	7,200	14,400
1918.....	10,000	10,000	20,000
1919.....	17,500	17,500	35,000
1920.....	30,000	70,000	100,000

Administration.

The work was conducted under the administrative direction of the Division of Scientific Research, Bureau of the Public Health Service. Surg. L. L. Lumsden, with headquarters at the Rural Sanitation Office in Washington, D. C., had charge of the field activities. Passed Asst. Surg. W. F. Draper, with headquarters in the State board of health office at Richmond, Va., had immediate supervision over the cooperative projects in Virginia. Passed Asst. Surg. K. E. Miller, with headquarters in the State board of health office at Raleigh, N. C., had immediate supervision over the cooperative projects in North Carolina and South Carolina, and during the fiscal year was given by the State board of health direction of all county health work in North Carolina in which the State board was a participant. Asst. Surg. Thomas Parran, jr., with headquarters at Joplin, Mo., had immediate supervision over the cooperative projects in Missouri, Oklahoma, and Kansas. Associate Epidemiologist W. K. Sharp, jr., with headquarters in the State board of health office at Montgomery, Ala., had immediate supervision over the cooperative projects in Alabama, Mississippi, and Kentucky. Associate Epidemiologist C. C. Applewhite, with headquarters in the State board of health office at Atlanta, Ga., had immediate supervision over the cooperative projects in Georgia and Tennessee. These field directors, besides making frequent inspections of the work and advising with field agents in their respective jurisdictions, made general studies of the problem of rural sanitation and assisted State health departments in stimulating the development of efficient whole-time health service in rural counties and townships.

Results.

Every one of the cooperative projects in the fiscal year ended June 30, 1920, yielded results exceeding in value manyfold the cost in labor and money. Among the total results indicated in the tabular statement, to which especial consideration may be given, are:

1. Public health lectures presenting the principles and details of sanitation to over 83,000 persons.

2. Over 150,000 sanitary inspections of private homes, with plain discussion of the findings being made in almost all instances with members of the households.

3. Physical examination of over 45,000 school children, with notification of parents resulting in the institution of corrective measures among a considerable proportion of the 27,631 children who were found to have more or less incapacitating physical defects.

4. Eighteen thousand eight hundred and seventy-two visits by health nurses to homes of cases of communicable disease, to advise and show the afflicted households how to prevent the spread of the infections.

5. Six hundred and seventy visits by health nurses to advise with and assist expectant mothers in carrying out hygienic and physiological measures making for healthy mothers and healthy babies.

6. Five thousand four hundred and twenty-eight home visits by health nurses to demonstrate hygienic measures for the protection of the health and lives of infants.

7. Nineteen thousand three hundred and seventy persons vaccinated for protection against smallpox, a disease which now should be obsolete and which can be made so by thorough vaccination.

8. Twenty-one thousand two hundred and three treatments to free persons of venereal disease infection and prevent the spread of the infection.

9. Four thousand one hundred and fifty-one cases of dangerous communicable disease quarantined to prevent spread of infection in the community, the State, and throughout the country.

10. The installation of 16,250 sanitary privies at homes previously provided with grossly insanitary privies or without toilets of any sort.

11. One thousand one hundred and seventy-eight homes provided with clean water supplies in place of contaminated water supplies.

12. Radical improvement of 494 public milk supplies, distributed to a considerable extent through the channels of interstate commerce, to prevent the spread, through the enriching medium of milk, of such infections as those of typhoid fever, scarlet fever, diphtheria, tuberculosis, septic sore throat, and infant diarrhea.

The value to the community of measures which result in the changing of a child from a cripple to a healthy-bodied, healthy-minded being, and the value to a mother of the life of her baby can not be estimated in dollars and cents; but the monetary value to a community of a marked lowering of sickness rate, with a corresponding increase in wage earning, may be estimated roughly. The cooperative projects generally, if considered only from a monetary standpoint, have been locally and nationally successful.

Among the demonstration units in which remarkable reduction in sickness and death rates has followed the sanitary improvements accomplished is Madison County, Ala. In this county, with a population of 50,000, the cooperative work was begun in the latter part of the calendar year 1917. The reduction in deaths for the year 1919, as compared with 1915, 1916, and 1917, which appeared definitely to result from the sanitary improvements accomplished, amounted to a saving in that year of over 150 human lives. The total cost of the health work in that county—met with funds from local, State, and National governmental sources—was for each of the calendar years 1918 and 1919 about \$10,000. The saving of the lives of American citizens at a cost of \$66 per life saved seems a reasonably good investment.

Among the States to which the Public Health Service has extended its cooperation in rural health work and in which progress in State-wide development of rural health work has been especially good may be mentioned Virginia, Alabama, Georgia, and North Carolina. The progress in Virginia is indicated in a previous section of this report, page 2336.

Alabama, having in 1915 only 1 county provided with a whole-time health department with a whole-time county health officer at its head, now has 16 counties, comprising over one-fourth of the rural population of the State, provided with county health departments, each having at its head a whole-time county health officer.

In Georgia, at the beginning of the fiscal year 1920, 9 counties had whole-time health departments, with appropriations from county sources aggregating \$43,400. In the course of the fiscal year, 8 additional counties established whole-time county health departments, making a total of 17, with appropriations from county sources aggregating over \$95,400, and 8 other counties, in which activities are to be begun as soon as properly qualified personnel to fill the positions of county health officers can be found, made appropriations and otherwise complied with the requirements of the State law relating to the establishment of whole-time county health departments.

In North Carolina, in the fiscal year 1920, 8 counties were added to the list of counties maintaining in financial cooperation with the State board of health whole-time county health departments, making a total of 21 such counties in that State, with budgets for health work increased from an aggregate of \$101,400 for 1919 to \$183,200 for 1920. In addition to these cooperative counties, 4 counties in North Carolina are maintaining entirely at their own expense whole-time health departments.

Conclusion.

Reasonably adequate appropriations for the cooperative activities of the United States Public Health Service in rural health work could be used with a high degree of effectiveness, and in entire consistence with our principles of government, for nation-wide promotion of human health, and would yield to the national welfare a dividend second to no other obtainable from investment of Federal funds.

IN MEMORIAM.

Acting Assistant Surgeon J. A. Hedrick, on duty at Vera Cruz, Mexico, died of yellow fever at that place on September 26, 1920.

Another name is added to that illustrious roll of officers of the United States Public Health Service who have given their lives in line of duty.